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The role of prophages on virulence transduction in *Acinetobacter baumannii* biofilms

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Recent years have observed an alarming increase on bacterial resistance to antibiotics. Many factors contribute to this, mainly antibiotics misuse but also an intrinsic capacity of bacteria to trade genetic material. These exchanges are emphasized in biofilms due to bacteria proximity, and involve several mechanisms including prophage-mediated transduction. Prophages are bacteriophages that incorporate into the bacterial genome, being able to excise and enter other bacteria. They are found in many bacterial species, being particularly frequent in *Acinetobacter baumannii*. This bacterial species is emerging as an important nosocomial pathogen worldwide especially due to a rapid acquisition of antibiotic resistance, in which prophage-mediated transduction may play a key role.The aim of this work was to evaluate the role of prophages on virulence transduction in *A. baumannii* biofilms. For this, an *A. baumannii* strain (ANC 4097) enclosing a prophage codifying a beta-lactam resistance gene and a receptor *A. baumannii* strain (NIPH 146) were selected based on biofilm-forming capacity. Strain susceptibility was tested for selecting a beta-lactam antibiotic to assess transduction. Both strains were genetically modified to follow transduction by fluorescence microscopy (mCherry inserted in the prophage and gfp in 146) and 146 was further modified to allow strain distinction on plate (lacZ). Levels of transduction were evaluated in mixed biofilms under different stress conditions (sub-MIC, light, and temperature).This work provides new insights into the importance of prophage transduction in virulence acquisition in mixed *A. baumannii* biofilms.